NACE CODE C25, C26, C27, C28, C29, C30

HIGH ENERGY DENSITY WELDING PROCESSES: LASER AND ELECTRONIC BEAM (HDE)

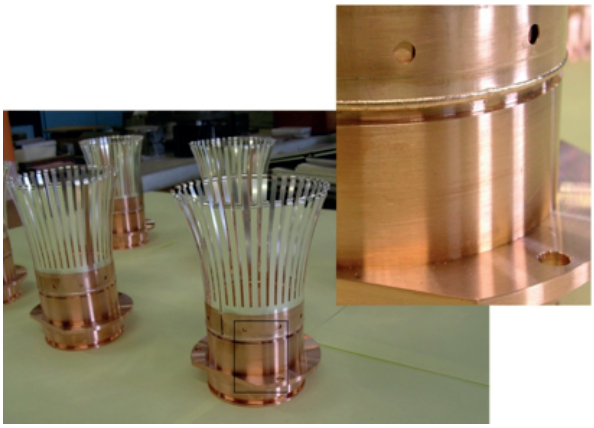
Innovations and Benefits - The use of HDE welding processes increases productivity and energy efficiency and reduces distortions in welded structures.

Use -
Development of efficient and reliable welding processes in different sectors (automotive, naval, aeronautical and aerospace). Integration of different technologies into high productivity welding systems. Creation of new products with a high resistance / weight ratio. Additive manufacturing and repair of high value components.

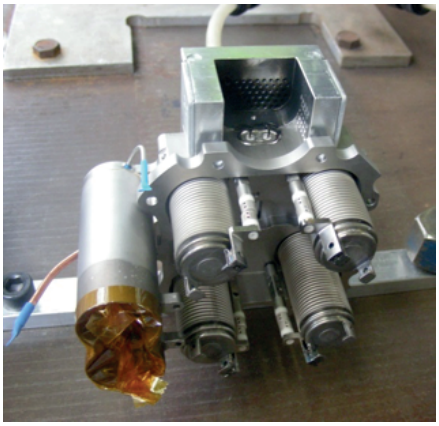
Applications and ongoing Activities - ENEA develops and characterize laser and electron beam welding processes in research projects and contracts with companies, also through the ENEA-investee CALEF Consortium (Consorzio per la ricerca e lo sviluppo delle applicazioni industriali del Laser e del fascio elettronico e dell'ingegneria di processo, materiali, metodi e tecnologie di produzione):
- PALES, SINAVE, ALISWATH, LACER, LASERALLUMINIO and SIFEG projects: development of welding processes for steels and aluminum alloys in railway and naval sectors
- ELIOS and AFSIAL projects: aluminum and titanium alloys welding in aerospace sector
- Participation to CLUSTER Trasporti ITALY 2020 project

Service / Research Agreements:
- Thales Alenia Space for welding components for experiments on the international space station and for satellites
- Contracts with CECOM for the welding processes development and the production of radiofrequency contacts of the CERN LHC

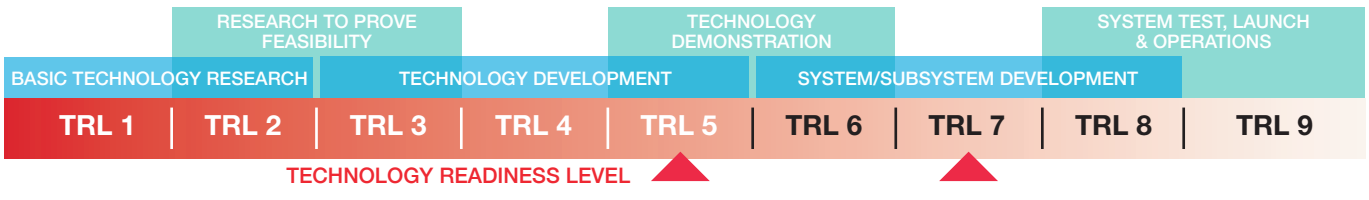
Devices patented by ENEA and CALEF:
- N. 710 RM2010A000347 (TINEA)
- N.726 RM2011A000189 (TTINEA)



1- RF Contacts



2- Gravitational wave sensor TASI



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